
ELIT-1000 Series

**Robust Box PC with
Intel® Atom™ D2550 Platform**

User's Manual

Version 1.3

Revision History

Version	Date	Description
1.0	2012/04/06	initial release (except Ch5 & Appendix)
1.0	2012/04/12	SSD: change to 40GB
1.0	2012/05/03	revise according to countersignature suggestion
1.0	2012/10/18	revise driver path; p.12 JPRS1
1.0	2012/10/24	add BIOS chapter
1.0	2012/10/26	add 16GB SSD and 2GB memory into ordering information
		replace MM-3I-2G with MM-3I-4G in optional information
1.0	2012/11/09	revise according to countersignature suggestion
1.1	2012/11/12	add CBL-3100-COM, RJ45 PLUG TO DB9M in ordering information
1.2	2012/12/03	JPRS1: delete RS-485 Auto-flow off
1.2	2013/01/07	revise spec as datasheet
		add COM1~2 definition in Chapter 2
		change to new User's Manual format
1.2	2013/01/14	change "JCOM2" to "COM2" in Ch3
		change COM1/2, JRSTB1, JPRS1 content in Ch3
1.3	2013/04/15	add section 4.3, Mount the Computer
		update cover month
		add VMK-1000 in ch1.5.1
		update ch1.3 spec
		update BIOS chapter

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Copyright Notice

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Declaration of Conformity

CE

The CE symbol on your product indicates that it is in compliance with the directives of the Union European (EU). A Certificate of Compliance is available by contacting Technical Support.

This product has passed the CE test for environmental specifications when shielded cables are used for external wiring. We recommend the use of shielded cables. This kind of cable is available from ARBOR. Please contact your local supplier for ordering information.

Warning

This is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

FCC Class A

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference, and
- (2) This device must accept any interference received, including interference that may cause undesired operation.

NOTE:

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and

used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

RoHS

ARBOR Technology Corp. certifies that all components in its products are in compliance and conform to the European Union's Restriction of Use of Hazardous Substances in Electrical and Electronic Equipment (RoHS) Directive 2002/95/EC.

The above mentioned directive was published on 2/13/2003. The main purpose of the directive is to prohibit the use of lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls (PBB), and polybrominated diphenyl ethers (PBDE) in electrical and electronic products. Member states of the EU are to enforce by 7/1/2006.

ARBOR Technology Corp. hereby states that the listed products do not contain unintentional additions of lead, mercury, hex chrome, PBB or PBDB that exceed a maximum concentration value of 0.1% by weight or for cadmium exceed 0.01% by weight, per homogenous material. Homogenous material is defined as a substance or mixture of substances with uniform composition (such as solders, resins, plating, etc.). Lead-free solder is used for all terminations (Sn(96-96.5%), Ag(3.0-3.5%) and Cu(0.5%)).

SVHC / REACH

To minimize the environmental impact and take more responsibility to the earth we live, Arbor hereby confirms all products comply with the restriction of SVHC (Substances of Very High Concern) in (EC) 1907/2006 (REACH --Registration, Evaluation, Authorization, and Restriction of Chemicals) regulated by the European Union.

All substances listed in SVHC < 0.1 % by weight (1000 ppm)

Important Safety Instructions

Read these safety instructions carefully

1. Read all cautions and warnings on the equipment.
2. Place this equipment on a reliable surface when installing. Dropping it or letting it fall may cause damage
3. Make sure the correct voltage is connected to the equipment.
4. For pluggable equipment, the socket outlet should be near the equipment and should be easily accessible.
5. Keep this equipment away from humidity.
6. The openings on the enclosure are for air convection and protect the equipment from overheating. **DO NOT COVER THE OPENINGS.**
7. Position the power cord so that people cannot step on it. Do not place anything over the power cord.
8. Never pour any liquid into opening. This may cause fire or electrical shock.
9. Never open the equipment. For safety reasons, the equipment should be opened only by qualified service personnel.
10. If one of the following situations arises, get the equipment checked by service personnel:
 - a. The power cord or plug is damaged.
 - b. Liquid has penetrated into the equipment.
 - c. The equipment has been exposed to moisture.
 - d. The equipment does not work well, or you cannot get it to work according to the user's manual.
 - e. The equipment has been dropped or damaged.
 - f. The equipment has obvious signs of breakage.
11. Keep this User's Manual for later reference.

Warning

The Box PC and its components contain very delicately Integrated Circuits (IC). To protect the Box PC and its components against damage caused by static electricity, you should always follow the precautions below when handling it:

1. Disconnect your Box PC from the power source when you want to work on the inside.
2. Use a grounded wrist strap when handling computer components.
3. Place components on a grounded antistatic pad or on the bag that came with the Box PC, whenever components are separated from the system.

Replacing the Lithium Battery

Incorrect replacement of the lithium battery may lead to a risk of explosion.

The lithium battery must be replaced with an identical battery or a battery type recommended by the manufacturer.

Do not throw lithium batteries into the trashcan. It must be disposed of in accordance with local regulations concerning special waste.

Technical Support

If you have any technical difficulties, please consult the user's manual first at: <ftp://ftp.arbor.com.tw/pub/manual>

Please do not hesitate to call or e-mail our customer service when you still cannot find out the answer.

<http://www.arbor.com.tw>

E-mail:info@arbor.com.tw

Warranty

This product is warranted to be in good working order for a period of one year from the date of purchase. Should this product fail to be in good working order at any time during this period, we will, at our option, replace or repair it at no additional charge except as set forth in the following terms. This warranty does not apply to products damaged by misuse, modifications, accident or disaster.

Vendor assumes no liability for any damages, lost profits, lost savings or any other incidental or consequential damage resulting from the use, misuse of, or inability to use this product. Vendor will not be liable for any claim made by any other related party.

Vendors disclaim all other warranties, either expressed or implied, including but not limited to implied warranties of merchantability and fitness for a particular purpose, with respect to the hardware, the accompanying product's manual(s) and written materials, and any accompanying hardware. This limited warranty gives you specific legal rights.

Return authorization must be obtained from the vendor before returned merchandise will be accepted. Authorization can be obtained by calling or faxing the vendor and requesting a Return Merchandise Authorization (RMA) number. Returned goods should always be accompanied by a clear problem description.

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Chapter 1

Introduction

1.1 The Product

The Box PC, ELIT-1000 is targeted at many different application fields. By adopting it, you can pinpoint specific markets, such as Thin Client, KIOSK, information booth, GSM Server, environment-critical and space-critical applications.



- **All-In-One Platform**
The CPU, DRAM and even software are integrated to provide a plug-and-play machine.
- **Compact-sized**
The kernel of ELIT-1000 is FMB-i2508, which is a non-standard form factor embedded board. The whole system consumes only a few space.
- **Fanless and Modular CPU Board**
By using a low power processor, the system does not have to rely on fans, which are often unreliable and cause dust to circulate inside the equipment. The modular design facilitates maintenance or possible upgrades on the CPU board. Modular Box PC can be easily modified to fit many different applications according to customers' requests.
- **Powerful Communication Capability**
The ELIT-1000 provides COM, Ethernet, USB, Mini Card slot, SD and DVI.
- **Numerous Display/Video Output**
Integrated with Intel® HD Graphics core, ELIT-1000 improves graphics and 3D rendering performance and supports display/video output options includes DVI-I and DVI-D.
- **Advanced Storage Solution**
ELIT-1000 comes with SD (Secure Digital) slot, which offers a better, faster and more cost-effective expansibilities for various applications.
- **Trustworthy**
The onboard Watchdog Timer can invoke an NMI or system RESET when your application loses control over the system.

1.2 About This Manual

This manual is meant for experienced users and integrators with hardware knowledge of personal computers. If you are not sure about the description herein, consult your vendor before further handling.

We recommend you keep one copy of this manual for the quick reference for any necessary maintenance in the future. Thank you for choosing ARBOR products.

1.3 Specifications

System Kernel	
Processor	Soldered onboard Intel® Atom™ D2550 1.86GHz processor
BIOS	AMI Flash BIOS
Chipset	Intel® NM10 PCH
Graphics	Integrated Intel® GMA 3650
System Memory	1 x 204-pin DDR3 SO-DIMM Socket, supporting 800/1066MHz SDRAM up to 4GB
Serial ATA	1 x Serial ATA port with 300MB/s HDD transfer rate
Ethernet Controller	2 x Realtek 8111 Gigabit Ethernet controllers
Watchdog Timer	1 ~ 255 levels reset
I/O Ports	
Serial Port	<ul style="list-style-type: none"> • 2 x RJ-45 ports • Support COM1 RS-232 • Support COM2 RS-232/422/485 selectable; RS-485 supports auto-flow control
Expansion Bus	1 x Mini-card slot for optional WiFi module
USB Port	4 x USB 2.0 ports
LAN	2 x RJ-45 ports for Gigabit Ethernet
Video Port	<ul style="list-style-type: none"> • 1 x DVI-I female connector for Digital Video output • 1 x DVI-D female connector for Digital Video output
Audio	Mic-in/ 2 x Line-out (500mW pre-amplified)
Storage	
Type	<ul style="list-style-type: none"> • 1 x 2.5" drive bay for HDD/SSD • 1 x SD socket, which can be outside accessible

Qualification	
FCC	Class A certified
CE	Certified
Environmental	
Operating Temp.	-25 ~ 55°C (-13 ~ 131°F), ambience w/ air flow
Storage Temp.	-40 ~ 85°C (-40 ~ 185°F)
Relative Humidity	10 ~ 95% @ 40°C (non-condensing)
Vibration	3 Grms/5 ~ 500 Hz/random operation
Shock & Crash	<ul style="list-style-type: none"> • Operating 20G (11ms), Non-operating 60G with HDD • Operating 40G (11ms), Non-operating 80G with SSD
Mechanical	
Construction	Aluminum alloy
Mounting	Support VESA-mount/wall-mounting
Weight	0.93Kg (2.05lb) / 1.1Kg (2.42lb)
Dimensions (W x D x H)	System = 188 x 149.5 x 30mm (7.4" x 5.88" x 1.18")
	Packing = 304 x 294 x 355mm (11.97" x 11.57" x 13.98")
Power Requirement	
Power Input	DC 19V input by 2.5mm power jack
Power Consumption	Max. 25W

1.4 Inside the Package

Upon opening the package, carefully inspect the contents. If any of the items is missing or appears damaged, contact your local dealer or distributor. The package should contain the following items:



1 x ELIT-1000 Robust System



1 x Driver CD
1 x User's Manual

1.5 Ordering Information

ELIT-1000	Barebone system w/o storage device and memory
ELIT-1000-16S2G	Box PC w/ 16GB SSD and 2GB memory

1.5.1 Optional Accessories

The following items are normally optional, but some vendors may include them as a standard package, or some vendors may not carry all the items.



PAC-B065W-2
65W AC/DC adapter kit



CBL-3100-COM
COM converter cable



VMK-1000
VESA mount kit for ELIT-1xxx series

1.5.2 Configure-to-Order Service



SSD-25032
Memoright 2.5" 32GB SATAII SSD kit
SSD-25016
Memoright 2.5" 16GB SATAII SSD kit



MM-3C-4G
DDR3-1333 4GB SDRAM
MM-3C-2G
DDR3-1333 2GB SDRAM



WIFI-IN1300
Intel® Centrino® Advanced-N 6205 WiFi module w/ 20cm internal wiring



ANT-D11
1 x WiFi Dual-band 2.4G/5G antenna

1.6. Driver Installation Notes

ELIT-1000 supports the operating systems of Windows XP and Windows 7. For Windows O.S., find the necessary device drivers on the CD that comes with your purchase. For different O.S., the installation of drivers/utilities may vary slightly, but generally they are similar. **DO** follow the sequence below to install the drivers to prevent errors:

Chipset→VGA→Audio→LAN

Paths to find various drivers on the CD are listed below. Users should execute each driver in respective parentheses and follow its directions to complete every installation.

Windows XP

Driver	Path
CHIPSET	\Chipset\WinXP_32 (infinst_autol.exe)
VGA	\VGA\INTEL_XP_32 (WindowsDriverSETUP.cmd)
LAN	\LAN\Realtek_8111E_XP_32 (setup.exe)
AUDIO	\Audio ALC662\REALTEK_HD\XP_WINDOWS_R267 (WDM_R267.exe)

Windows 7-32 bit

Driver	Path
CHIPSET	\Chipset\Win7_x86 (infinst_autol.exe)
VGA	\VGA\Win7_x86 (Setup.exe)
LAN	\LAN\Install_Win7_7048_09162011 (setup.exe)
AUDIO	\Audio ALC662\Win 7(32, 64 bits) Driver_R2.66 (Vista_Win7_R266.exe)

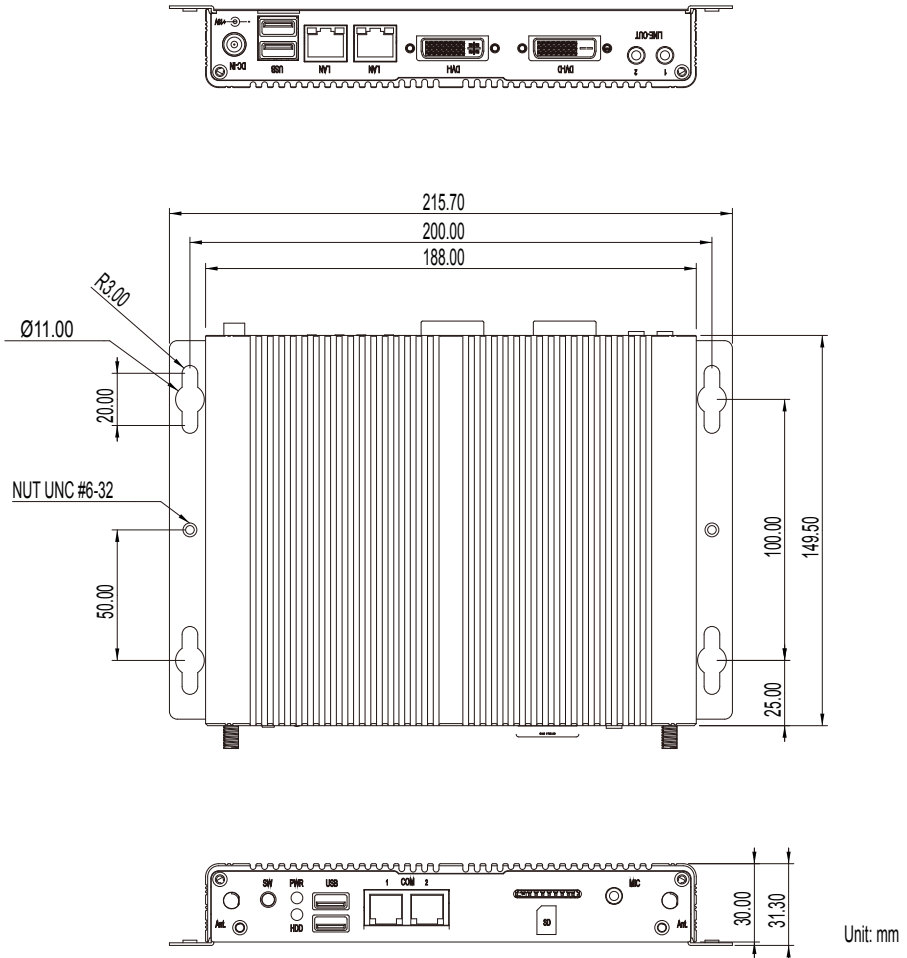


Chapter 2

System Overview

2.1 Dimensions

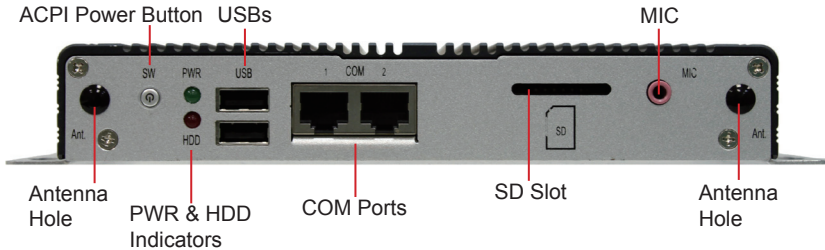
The following illustration shows the dimension of ELIT-1000, with the measurements in width, depth, and height called out.



2.2 Take A Tour

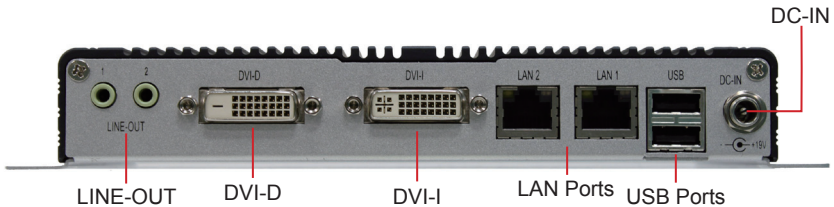
The computer has some I/O ports, status LED lights and controls on the front panel. The following illustrations show the front panel and rear panel of ELIT-1000, with all the components on them called out.

2.2.1 Front View



2.2.2 Rear View

Take a look at the rear side of ELIT-1000.



2.2.3 Side View



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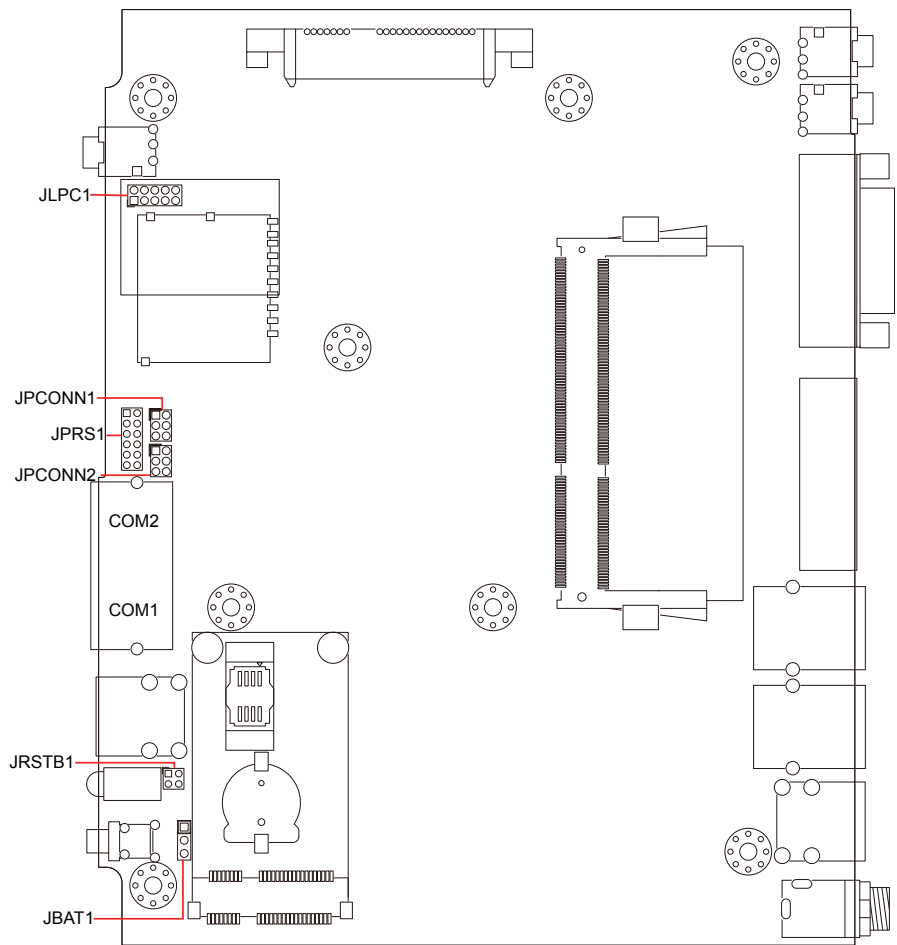


Chapter 3

Engine of the Computer

3.1 Board Layout

The main board FMB-i2508 forms the engine of the ELIT-1000. This section will provide an thorough views of this board.



3.2 Jumpers and Connectors

The following in this chapter will explicate each of the components one-by-one.



3.2.1 Jumpers

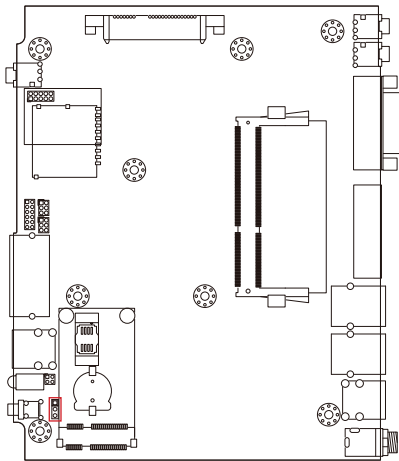
JBAT1

Function: Clear CMOS Setting

Jumper Type: Onboard 2.54mm pitch 1x3-pin header

Setting:

Pin	Function	
1-2	Keeps CMOS (Default)	
2-3	Clears CMOS	






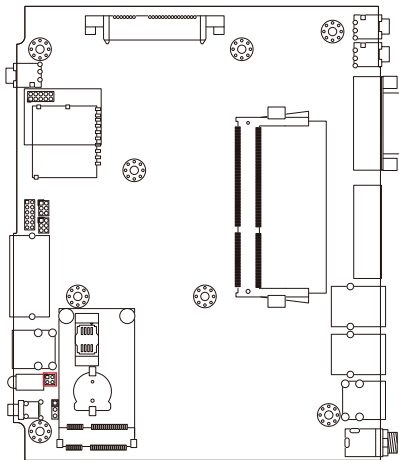
JRSTB1

Function: AT/ATX Power Mode Selector

Jumper Type: Onboard 2x4-pin 2.0mm pin header

Setting:

Pin	Function	
NC	ATX Mode (Default)	
1-2	External Reset	
3-4	AT Mode	



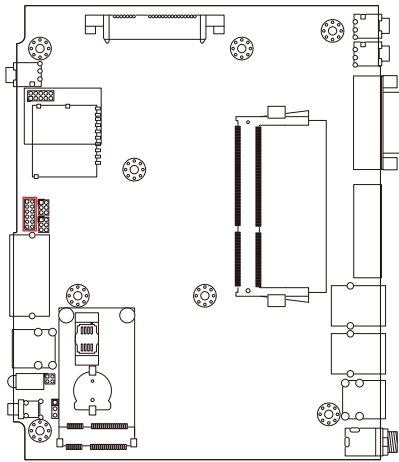
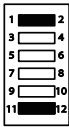
JPRS1

Function: COM2 RS232/422/485 Setting

Jumper Type: Onboard 2x6-pin 2.0mm pin header

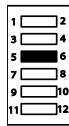
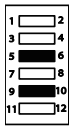
Setting:

Pin	RS-232 Mode (Default)	RS-422 Mode	RS-485 Mode w/ Auto-flow
1-2	SHORT	OPEN	OPEN
3-4	OPEN	SHORT	OPEN
5-6	OPEN	OPEN	SHORT
7-8	OPEN	OPEN	OPEN
9-10	OPEN	OPEN	OPEN
11-12	SHORT	OPEN	OPEN



Termination Setting for COM2 in RS-422/485 mode

Pin	RS-422		RS-485	
	Termination On	Termination Off (Default)	Termination On	Termination Off (Default)
7-8	SHORT	OPEN	OPEN	OPEN
9-10	SHORT	OPEN	SHORT	OPEN



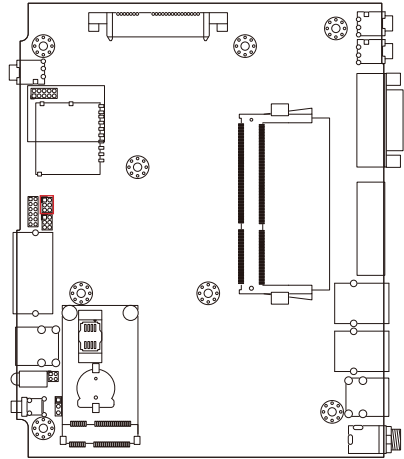
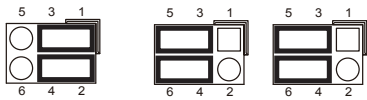
JPCONN1

Function: COM2 RS232/422/485 Setting

Jumper Type: Onboard 2x3-pin 2.0mm pin header

Setting:

	RS-232 Mode (Default)	RS-422 Mode	RS-485 Mode
Short	1-3	3-5	3-5
Pin	2-4	4-6	4-6



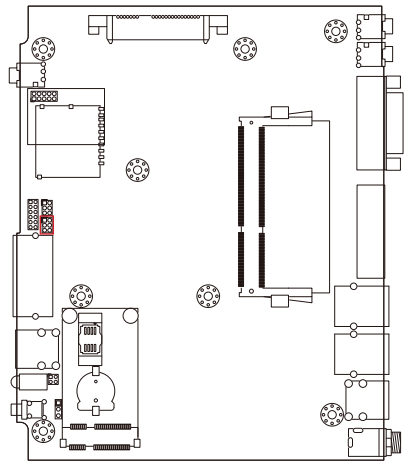
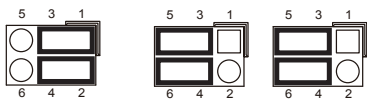
JPCONN2

Function: COM2 RS232/422/485 Setting

Jumper Type: Onboard 2x3-pin 2.0mm pin header

Setting:

	RS-232 Mode (Default)	RS-422 Mode	RS-485 Mode
Short	1-3	3-5	3-5
Pin	2-4	4-6	4-6



3.2.2 Connectors

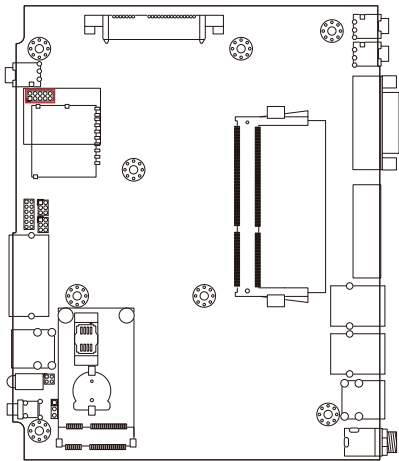
JLPC1

Function: External 80 Port Pin Header

Jumper Type: Onboard 2.00mm pitch 10-pin header

Setting:

Pin	Description	Pin	Description
1	CLOCK	2	GND
3	FRAME	4	LAD0
5	RESET	6	NC
7	LAD3	8	LAD2
9	VCC3	10	LAD1

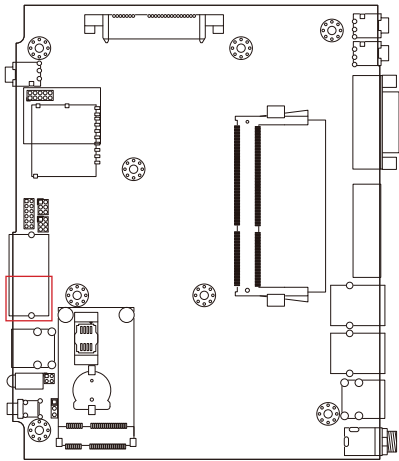


COM1

Function: Serial Port; only supports RS-232 mode

Setting:

COM1 Pin	RS-232 Description
1	DSRN2
2	DCDN2
3	DTRN2
4	GND
5	SIN2
6	SOUTN2
7	CTSN2
8	RTSN2

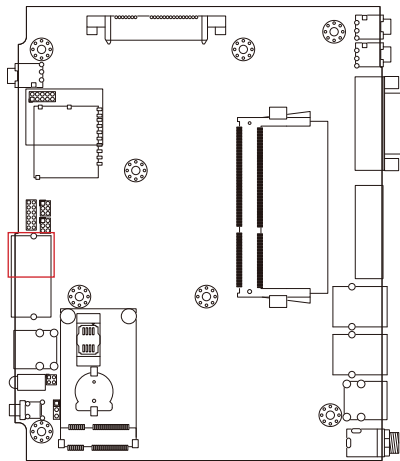


COM2

Function: Serial Port; COM2 is RS-232/422/485 selectable; RS-485 mode supports auto-flow control function.

Setting:

COM2 Pin	RS-232 Def.	RS-422 Def.	RS-485 Def.
1	DSRN2	COM2_SEL1(TX+)	COM2_SEL1 (TX+)
2	DCDN2	COM2_SEL2(TX-)	COM2_SEL2 (TX-)
3	DTRN2	N/A	N/A
4	GND	N/A	N/A
5	SIN2	N/A	N/A
6	SOUTN2	N/A	N/A
7	CTSN2	COM2_SEL7(RX+)	N/A
8	RTSN2	COM2_SEL7(RX-)	N/A



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Chapter 4

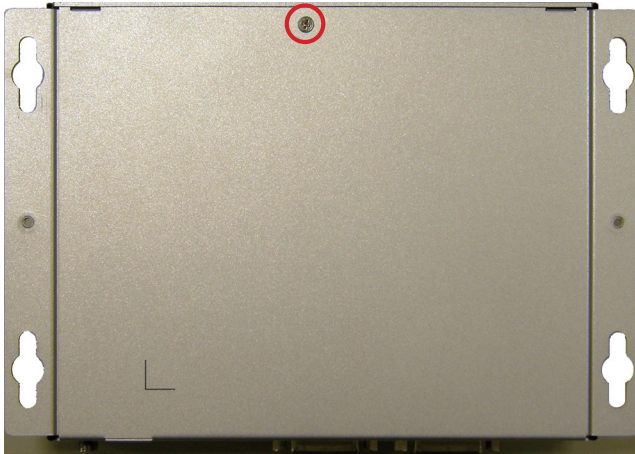
Installation and Maintenance

4.1 Install Hardware

ELIT-1000 is designed to be modular, slim and lightweight for easier maintenance. The following sections describe simple hardware installations.

4.1.1 Removing Bottom Cover

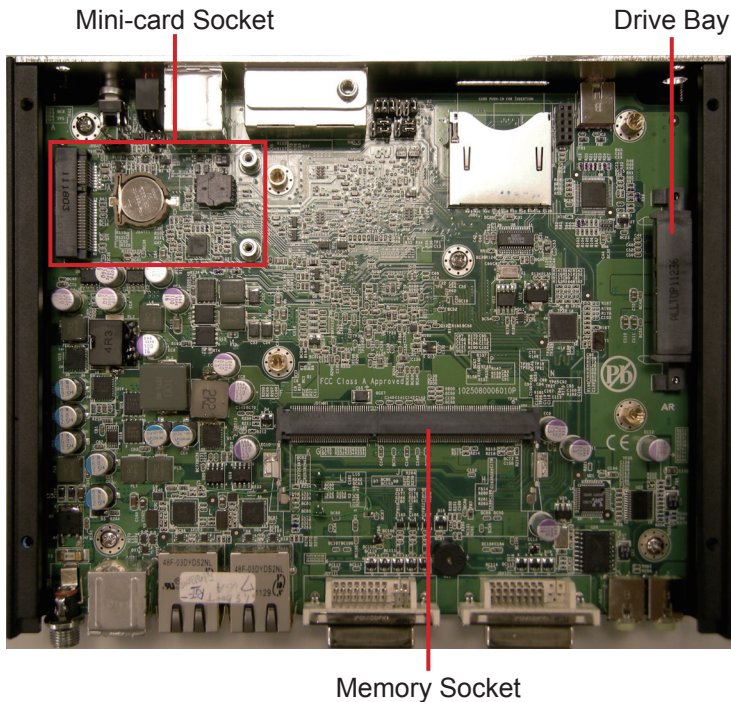
1. Carefully place the Box PC upside down. Unscrew the screw securing the bottom cover with cross-head screwdriver. Retain it safely for later use, so do the rest components we are going to remove.



2. Turn to the front panel and loosen two screws close to bottom plate. Then, turn to another side to unscrew two screws at corners. Locate four hex standoffs beside DVI-I & DVI-D. Unscrew them with special hex driver. You also have to take off washer and nut from DC-IN connector. Carefully unmount the one-piece bottom cover from main unit.

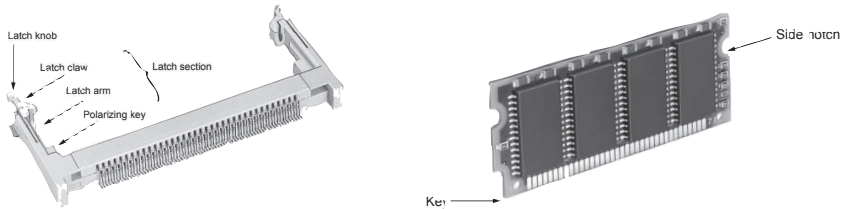


3. Gently pull the bottom cover upward.



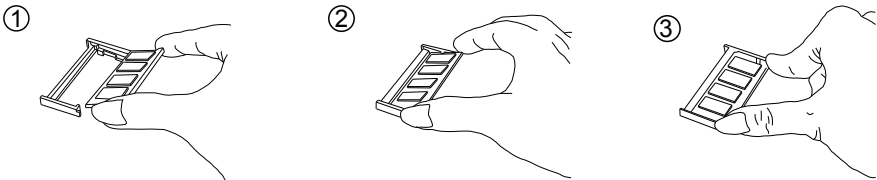
- ▶ To install memory module, see [4.1.2 Installing Memory Module on page 22](#).
- ▶ To install WiFi module, see [4.1.3 Installing WiFi Module on page 23](#).
- ▶ To install hard disc drive, see [4.1.4 Installing Hard Disk Drive on page 24](#).

4.1.2 Installing Memory Module



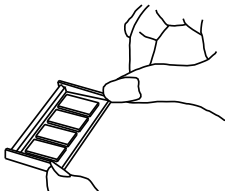
To install the Memory module, locate the Memory SO-DIMM slot on the board and perform as below:

1. Adjust the socket polarizing key and the board key to the same direction.
2. Insert the board obliquely. Moreover, lay the board in parallel to the opening at angle of 20° to 30° , and softly insert the board so as to hit the socket bottom. Stopping insertion halfway will result in improper insertion.
3. Applying the board side notch in parallel to the socket bottom so that the board position cannot be displaced, press the board side notch up, and fix it to the latch portion at both socket edges. Press the board side notch, and release the notch with a snap “click” tone, if the printed board exceeds the latch claw head.



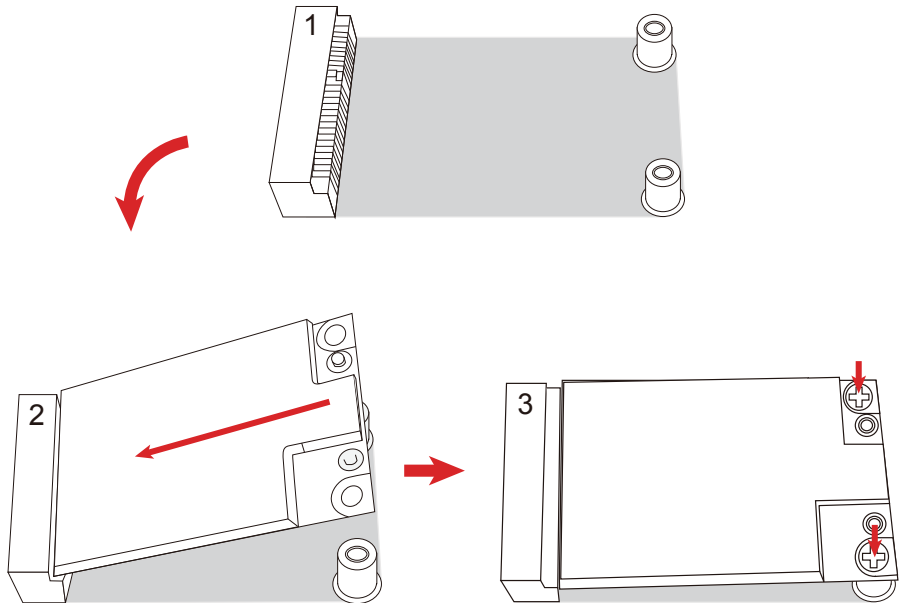
Procedures for board extraction

Apply the thumb nail to the latch knob at both socket edges. Forcibly widen the latch knobs to right and left ways, and release the latch. Then draw the board out along an angle where the board is raised.



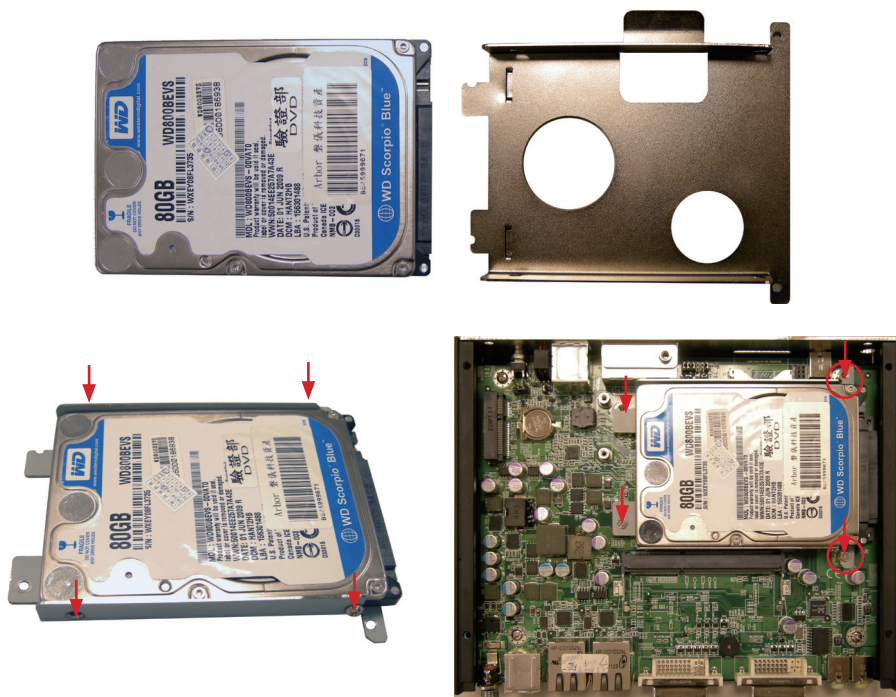
4.1.3 Installing WiFi Module

1. Locate Mini-card socket.
2. Insert WiFi module into its slot at a slanted angle. Remember to align the notch with the break on slot.
3. And then, secure two screws to fasten the module.



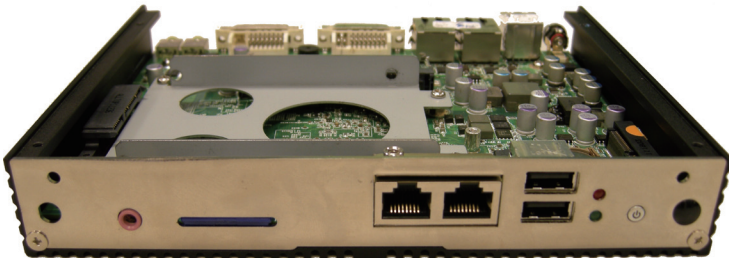
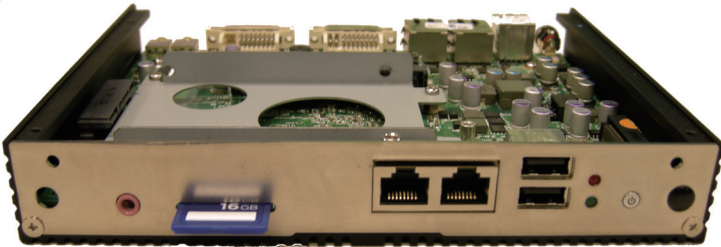
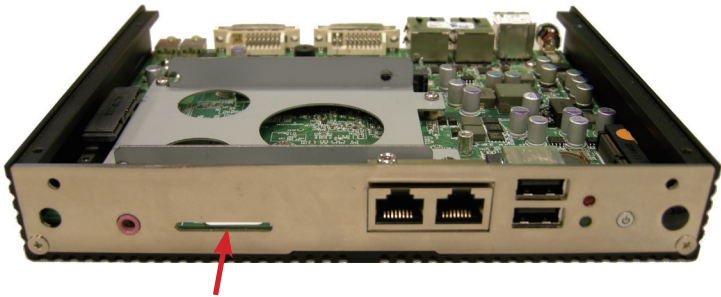
4.1.4 Installing Hard Disk Drive

1. Fasten HDD on its bracket.
2. Insert the bracket into driver bay and secure its corners from two screws at right side first.



4.2 Access SD Card

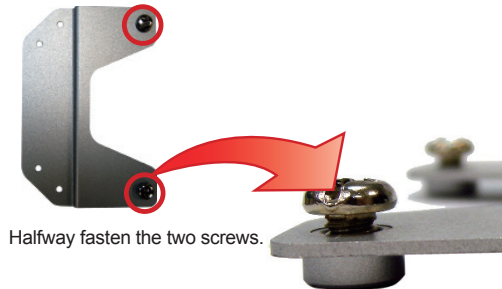
1. Make sure you have turned off the power before inserting or ejecting the SD card (if OS is installed on SD card).
2. Locate the SD card slot on the front panel.
3. Insert your SD card into the slot. To remove the SD card, push that inwards to pop it out.



4.3 Mount the Computer

Integrate the computer to where it works by mounting it to a wall in the surroundings or to the rear of a display monitor. Mounting the computer to the rear of a display monitor relies on VMK-1000, a VESA mount kit, which is available on your option. Follow the guide below to integrate the computer with a display monitor using VMK-1000.

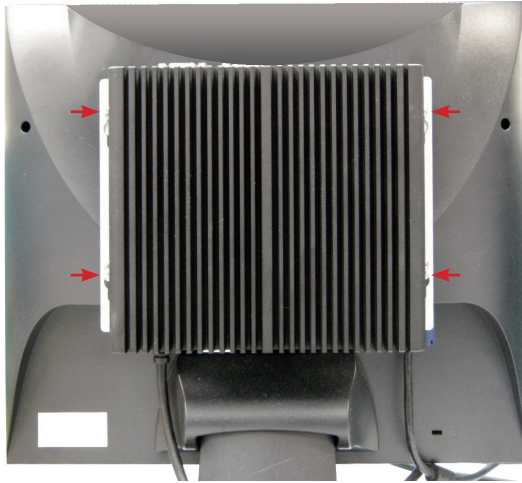
1. Prepare the VMK-1000 VESA mount kit, which includes two adapters. Halfway fasten two screws to each of the adapter as marked in the illustration below.



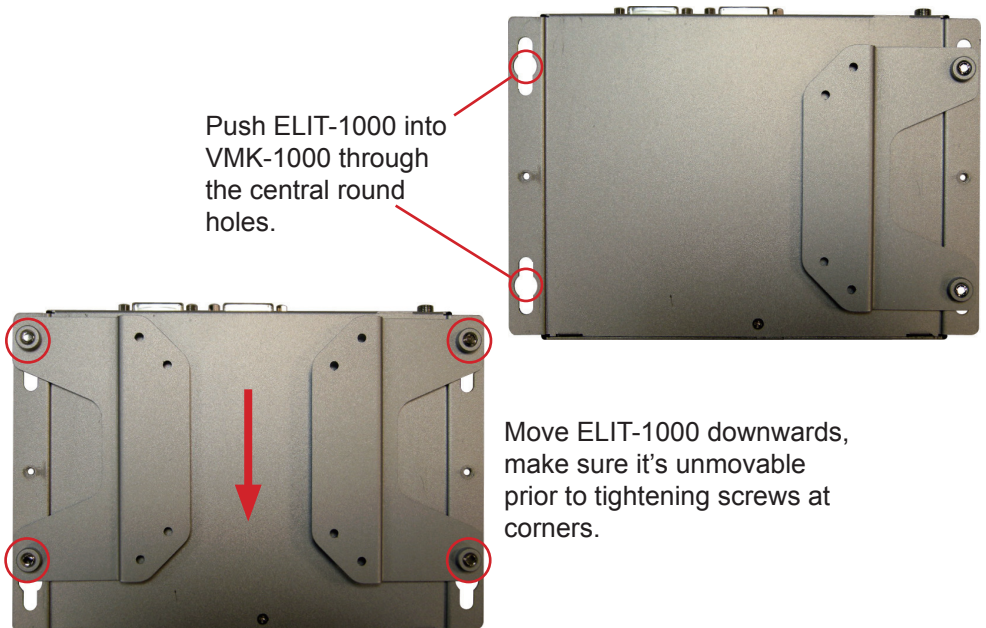
2. Fix VMK-1000 on place you want to fix (in this example, display monitor) through VESA-100 x 100 screw holes.



3. Hang the computer on VMK-1000 and tighten screws at corners to the end.



4. Viewing from the opposite side, it would be like this:



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Chapter 5

BIOS

5.1 Main

The AMI BIOS provides a Setup utility program for specifying the system configurations and settings. The BIOS RAM of the system stores the Setup utility and configurations. When you turn on the computer, the AMI BIOS is immediately activated. To enter the BIOS SETUP UTILITY, press “**Delete**” once the power is turned on. When the computer is shut down, the battery on the motherboard supplies the power for BIOS RAM.

The **Main Setup** screen lists the following information:

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.		
Main	Advanced	Chipset Boot Security Save & Exit
BIOS Information BIOS Vendor American Megatrends Core Version 4.6.5.3 Compliancy UEFI 2.3; PI 1.2 BIOS version ELIT-1000 1.12 Build Date and Time 12/10/2012 16:09:17 System Date [Mon 04/15/2013] System Time [17:38:10] Access Level Administrator		Set the Date. Use Tab to switch between Data elements. →+: Select Screen ↑: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F9: Optimized Defaults F10: Save and Exit ESC: Exit
Version 2.15.1226. Copyright (C) 2012 American Megatrendes, Inc.		

Setting	Description
BIOS Information	
BIOS Vendor	displays vendor name
Core Version	displays current core version information
Compliancy	displays compliant format
BIOS Version	displays current BIOS version information
Build Date and Time	the date that the BIOS version was made/updated

System Date	<p>Set the system date. Note that the 'Day' automatically changes when you set the date.</p> <p>► The date format is: Day: Sun to Sat Month: 1 to 12 Date: 1 to 31 Year: 1998 to 2099</p>
System Time	<p>Set the system time.</p> <p>► The time format is: Hour: 00 to 23 Minute: 00 to 59 Second: 00 to 59</p>

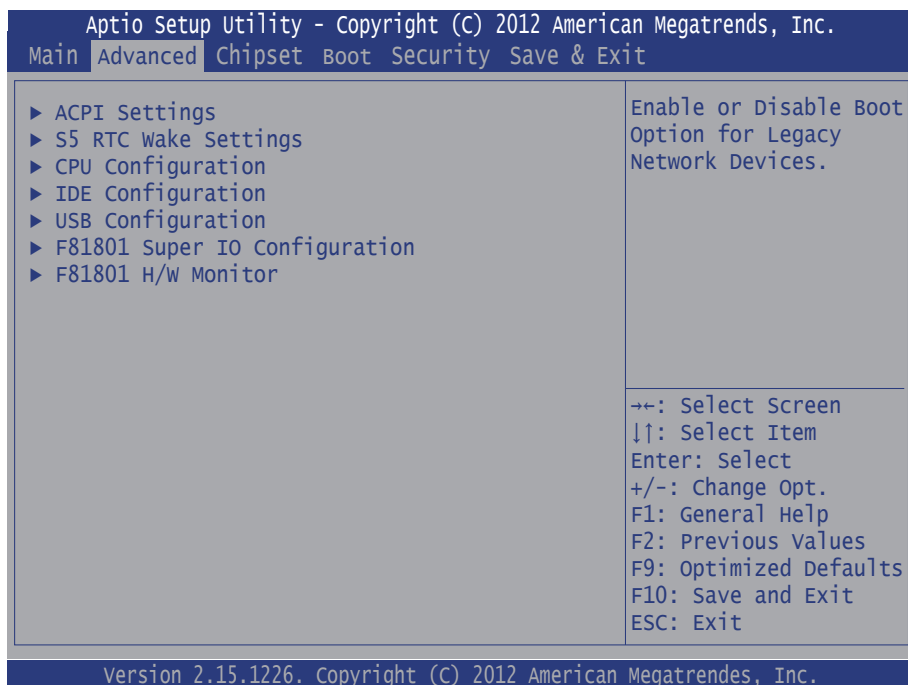
Key Commands

BIOS Setup Utility is mainly a key-based navigation interface. Please refer to the following key command instructions for navigation process.

Keystroke	Function
◀ ▶	Move to highlight a particular configuration screen from the top menu bar / Move to highlight items on the screen
▼ ▲	Move to highlight previous/next item
Enter	Select and access a setup item/field
Esc	<p>On the Main Menu – Quit the setup and not save changes into CMOS (a message screen will display and ask you to select “OK” or “Cancel” for exiting and discarding changes. Use “←” and “→” to select and press “Enter” to confirm)</p> <p>On the Sub Menu – Exit current page and return to main menu</p>
Page Up / +	Increase the numeric value on a selected setup item / make change
Page Down -	Decrease the numeric value on a selected setup item / make change
F1	Activate “General Help” screen
F10	Save the changes that have been made in the setup and exit. (a message screen will display and ask you to select “OK” or “Cancel” for exiting and saving changes. Use “←” and “→” to select and press “Enter” to confirm)

5.2 Advanced

The “Advanced” setting page provides you the options to configure the details of your hardware, such as ACPI, CPU, IDE, USB and Super IO.



Setting	Description
ACPI Settings	See Section 5.2.1
S5 RTC Wake Settings	See Section 5.2.2
CPU Configuration	See Section 5.2.3
IDE Configuration	See Section 5.2.4
USB Configuration	See Section 5.2.5
F81801 Super IO Configuration	See Section 5.2.6
F81801 H/W Monitor	See Section 5.2.7

5.2.1 ACPI Settings

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.

Advanced

ACPI Settings

Enable ACPI Auto Configuration [Disabled]

Enable Hibernation [Enabled]

ACPI Sleep State [S1 (CPU Stop Clock)]

Enables or Disables BIOS ACPI Auto Configuration.

→+: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F9: Optimized Defaults
F10: Save and Exit
ESC: Exit

Version 2.15.1226. Copyright (C) 2012 American Megatrends, Inc.

Setting	Description
Enable ACPI Auto Configuration	Enable or Disable (default) BIOS ACPI Auto Configuration.
Enable Hibernation	Enable (default) or Disable system ability to Hibernate (OS/S4 Sleep State). This option may be not effective with some OS.
ACPI Sleep State	Select the highest ACPI sleep state the system will enter when the SUSPEND button is pressed. ► Options: Suspend Disabled , S1 (CPU Stop Clock) (default).

5.2.2 S5 RTC Wake Settings

Enable system to wake from S5 using RTC alarm.

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.		
Advanced		
wake system with Fixed Time	[Disabled]	Enable or disable System wake on alarm event. When enabled, System will wake on the hr::min::sec specified
wake up hour	9	
wake up minute	30	
wake up second	0	
wake system with Dynamic Time	[Disabled]	
		→←: Select Screen ↓↑: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F9: Optimized Defaults F10: Save and Exit ESC: Exit
Version 2.15.1226. Copyright (C) 2012 American Megatrends, Inc.		

Setting	Description
Wake system with Fixed Time	Enable or Disable (default) System wake on alarm event. When enabled, System will wake on the hr::min::sec specified.
Wake up hour	select 0-23 For example enter 3 for 3am and 15 for 3pm
Wake up minute	0-59
Wake up second	0-59
Wake system with Dynamic Time	Enable or Disable (default) System wake on alarm event. When enabled, System will wake on the current time + Increase minute(s).

5.2.3 CPU Configuration

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.

Advanced

CPU Configuration		Enabled for windows XP and Linux (OS optimized for Hyper-Threading Technology) and Disabled for other OS (OS not optimized for Hyper-Threading Technology).
Processor Type	Intel(R) Atom(TM) CPU	
EMT64	Supported	
Processor Speed	1865 MHz	
System Bus Speed	533 MHz	
Ratio Status	14	
Actual Ratio	14	
System Bus Speed	533 MHz	
Processor Stepping	30661	
Microcode Revision	269	
L1 Cache RAM	2x56 k	→+: Select Screen ↓↑: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F9: Optimized Defaults F10: Save and Exit ESC: Exit
L2 Cache RAM	2x512 k	
Processor Core	Dual	
Hyper-Threading	Supported	
Hyper-Threading	[Enabled]	
Execute Disable Bit	[Enabled]	
Limit CPUID Maximum	[Disabled]	

Version 2.15.1226. Copyright (C) 2012 American Megatrends, Inc.

Setting	Description
Hyper-threading	Enabled (default) for Windows XP and Linux (OS optimized for Hyper-threading Technology) and Disabled for other OS (OS not optimized for Hyper-threading Technology).
Execute Disable Bit	XP can prevent certain classes of malicious buffer overflow attacks when combined with a supporting OS (Windows Server 2003 SP1, Windows XP SP2, SuSE Linux 9.2, RedHat Enterprise 3 Update 3.) ► Options: Enabled (default) and Disabled .
Limit CPUID Maximum	Disabled for Windows XP ► Options: Enabled and Disabled (default).

5.2.4 IDE Configuration

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.		
Advanced		
SATA Port0	Not Present	SATA Ports (0-3) Device Names if Present and Enabled.
SATA Port1	Not Present	
SATA Controller(s)	[Enabled]	
Configure SATA as	[AHCI]	
Port0 Speed Limit	[No Limit]	→←: Select Screen ↓↑: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F9: Optimized Defaults F10: Save and Exit ESC: Exit
Port1 Speed Limit	[No Limit]	
SATA Port 0	[Enabled]	
SATA Port 0 Hot Plug	[Enabled]	
SATA Port 1	[Enabled]	
SATA Port 1 Hot Plug	[Enabled]	
Misc Configuration for hard disk		
Version 2.15.1226. Copyright (C) 2012 American Megatrends, Inc.		

Setting	Description
SATA Controller(s)	SATA Ports (0-3) Device Names if Present and Enabled. ► Options: Enabled (default) and Disabled .
Configure SATA as	Select a configuration for SATA Controller. ► Options: IDE , AHCI (default).
Port0/1 Speed Limit	Select Port0/1 AHCI Speed Limit. ► Options: No Limit (default), GEN1 Rate , Gen2 Rate
Port 0/1	Enable (default) or Disable SATA Port.
Port 0/1 Hot Plug	Designates this port as Hot Pluggable. ► Options: Enabled (default) and Disabled .

5.2.5 USB Configuration

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.

Advanced

USB Configuration

USB Devices:
1 Drive, 1 Keyboard, 1 Mouse

Legacy USB Support [Enabled]
EHCI Hand-off [Disabled]

Mass Storage Devices:
Generic STORAGE DEVICE 9454 [Auto]

Enables Legacy USB support. AUTO option disables legacy support if no USB devices are connected. DISABLE option will keep USB devices available only for EFI applications.

→+: Select Screen
↓↑: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F9: Optimized Defaults
F10: Save and Exit
ESC: Exit

Version 2.15.1226. Copyright (C) 2012 American Megatrends, Inc.

Setting	Description
USB Devices:	
Legacy USB Support	Enables (default) Legacy USB support. AUTO option disables legacy support if no USB devices are connected. DISABLE option will keep USB devices available only for EFI applications.
EHCI Hand-off	This is a workaround for OSeS without EHCI hand-off support. The EHCI ownership change should be claimed by EHCI driver. ► Options: Enabled and Disabled (default).

Mass Storage Devices:

Generic STORAGE
DEVICE 9454

Mass storage device emulation type. 'AUTO' enumerates devices less than 530MB as floppies. Forced FDD option can be used to force HDD formatted drive to boot as FDD (e.g. ZIP drive).

- Options: **Auto** (default), **Floppy**, **Forced FDD**, **Hard Disk**, **CD-ROM**

5.2.6 F81801 Super IO Configuration

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.

Advanced

F81801 Super IO Configuration

F81801 Super IO Chip

F81801

► Serial Port 0 Configuration

► Serial Port 1 Configuration

Power On After Power Fail

[Power On]

Set Parameters of
Serial Port 0 (COMA)

←→: Select Screen
↓↑: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F9: Optimized Defaults
F10: Save and Exit
ESC: Exit

Version 2.15.1226. Copyright (C) 2012 American Megatrends, Inc.

Setting	Description
Serial Port 0/1 Configuration	See Next Tab
Power On After Power Fail	Specify what state to go to when power is re-applied after a power failure. ► Options: Power Off , Power On (default), Last State

Serial Port 0/1 Configuration

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.

Advanced

Serial Port 0 Configuration

Serial Port [Enabled]

Device Settings IO=3F8h; IRQ=4;

Change Settings [Auto]

Enable or Disable Serial Port (COM)

→+: Select Screen
↓↑: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F9: Optimized Defaults
F10: Save and Exit
ESC: Exit

Version 2.15.1226. Copyright (C) 2012 American Megatrends, Inc.

Setting	Description
Serial Port	Enable (default) or Disable Serial Port (COM)
Change Settings	Select an optimal setting for Super IO device.

5.2.7 F81801 H/W Monitor

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.

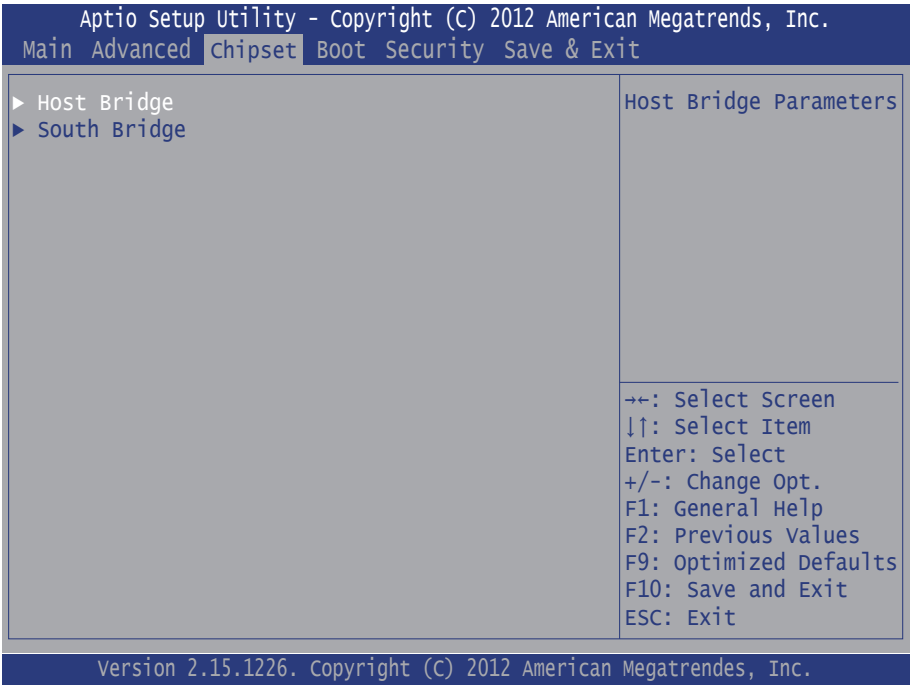
Advanced

Pc Health Status	
CPU temperature1	: +52°c
System temperature2	: +45°c
3.3V	: +3.328 V
VCORE	: +1.184 V
VDIMM	: +1.552 V
VSB3	: +3.344 V
VBAT	: +3.280 V

→+: Select Screen
↓↑: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F9: Optimized Defaults
F10: Save and Exit
ESC: Exit

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5.3 Chipset



Setting	Description
Host Bridge	See Section 5.3.1
South Bridge	See Section 5.3.2

5.3.1 Host Bridge

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.									
Chipset									
<p>► Intel IGD Configuration</p> <p>***** Memory Information *****</p> <table> <tr> <td>Memory Frequency</td> <td>1067 MHz(DDR3)</td> </tr> <tr> <td>Total Memory</td> <td>4096 MB</td> </tr> <tr> <td>DIMM#0</td> <td>Not Present</td> </tr> <tr> <td>DIMM#1</td> <td>4096 MB</td> </tr> </table>	Memory Frequency	1067 MHz(DDR3)	Total Memory	4096 MB	DIMM#0	Not Present	DIMM#1	4096 MB	<p>Config Intel IGD Settings.</p> <p> →: Select Screen ↓↑: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F9: Optimized Defaults F10: Save and Exit ESC: Exit </p>
Memory Frequency	1067 MHz(DDR3)								
Total Memory	4096 MB								
DIMM#0	Not Present								
DIMM#1	4096 MB								
Version 2.15.1226. Copyright (C) 2012 American Megatrends, Inc.									

Setting	Description
Intel IGD Configuration	See Next Tab

Intel IGD Configuration

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.

Chipset

Intel IGD Configuration

IGFX - Boot Type [DVI-I]

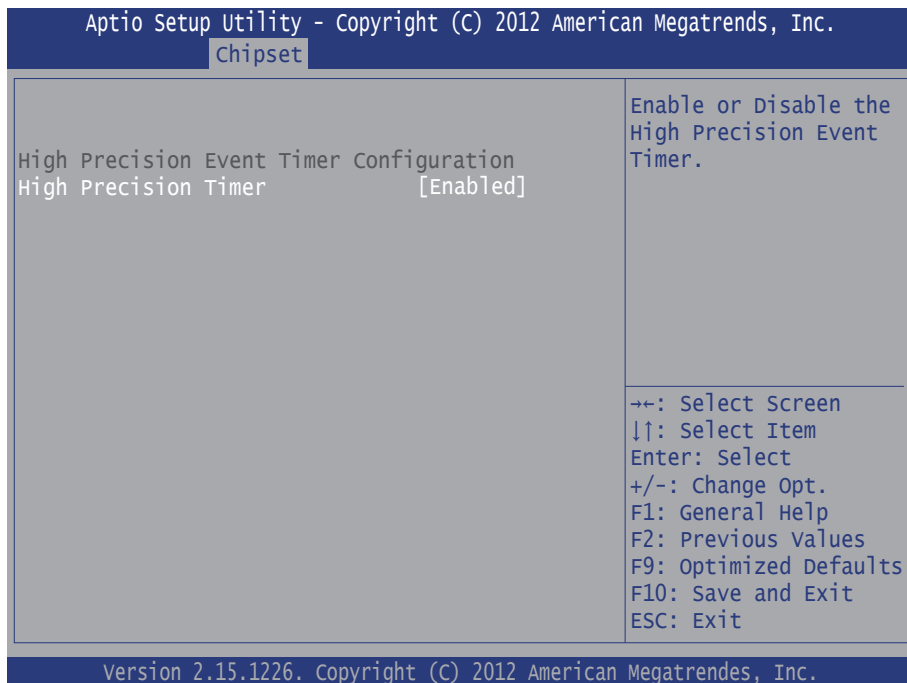
Select the Video Device which will be activated during POST. This has no effect if external graphics present.

→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F9: Optimized Defaults
F10: Save and Exit
ESC: Exit

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Setting	Description
IGFX - Boot Type	Select the Video Device which will be activated during POST. This has no effect if external graphics present. ► Options: DVI-I (default) and DVI-D .

5.3.2 South Bridge



Setting	Description
High Precision Timer	Enable (default) or Disable the High Precision Event Timer.
SLP_S4 Assertion Width	Select a minimum assertion width of the SLP_S4# signal. ► Options: 1-2 (default)/ 2-3/3-4/4-5 Seconds

5.4 Boot

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.
Main Advanced Chipset **Boot** Security Save & Exit

Boot Configuration

Bootup NumLock State [On]

Quiet Boot [Disabled]

Fast Boot [Enabled]

Boot Option Priorities

Select the keyboard NumLock state

→+: Select Screen
↓↑: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F9: Optimized Defaults
F10: Save and Exit
ESC: Exit

Version 2.15.1226. Copyright (C) 2012 American Megatrendes, Inc.

Setting	Description
Bootup NumLock State	Select the keyboard NumLock state ► Options: On (default), Off
Quiet Boot	Enable or Disable (default) Quiet Boot option.
Fast Boot	Enable (default) or Disable boot with initialization of a minimal set of devices required to launch active boot option. Has no effect for BBS boot options.

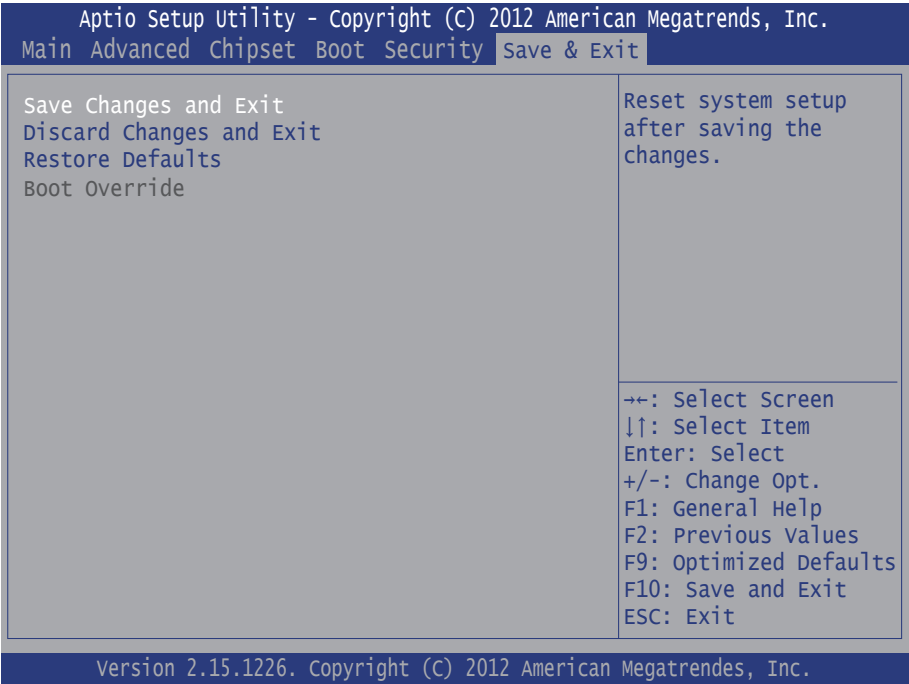
5.5 Security

The **Security** menu sets up the administrator password. Once an administrator password is set up, this BIOS SETUP utility is limited to access and will ask for the password each time any access is attempted.

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.	
Main Advanced Chipset Boot Security Save & Exit	
Password Description Minimum length 3 Maximum length 20 Administrator Password	Set Administrator Password →+: Select Screen ↓↑: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F9: Optimized Defaults F10: Save and Exit ESC: Exit
Version 2.15.1226. Copyright (C) 2012 American Megatrends, Inc.	

Setting	Description
Administrator Password	To set up an administrator password: 1. Select Administrator Password . The screen then pops up an Create New Password dialog. 2. Enter your desired password that is no less than 3 characters and no more than 20 characters. 3. Hit [Enter] key to submit.

5.6 Save & Exit



Setting	Description
Save Changes and Exit	Saves the changes and resets the system. ▶ Enter the item and then a dialog box pops up: Save configuration and exit?
Discard Changes and Exit	Exit system setup without saving any changes. ▶ Enter the item and then a dialog box pops up: Quit without saving?
Restore Defaults	Restore/Load Default values for all the setup options. ▶ Enter the item and then a dialog box pops up: Load Optimized Defaults?
Boot Override	Boot Override presents a list of boot devices on screen. Select the device to boot up the system regardless of the currently configured boot priority.

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Appendix

Watchdog Timer (WDT) Setting

WDT is widely applied to industry computers to monitor activities of CPU. The programmed application triggers WDT with adequate timer setting depending on its requirement. Before WDT counts down to zero, the functional system will reset the counter. In case the WDT counter is not reset by an abnormal system, it will counts down to zero and then reset the system automatically.

This computer supports the watchdog timer up to 255 levels for users for software programming. Below please take the source code written in C for a WDT application example.

```
outportb(0x4e, 0x87);      /* initial IO port */
outportb(0x4e, 0x87);      /* twice, */

outportb(0x4e, 0x07);      /* point to logical device */
outportb(0x4e+1, 0x07);    /* select logical device 7 */
outportb(0x4e, 0xf5);      /* select offset f5h */
outportb(0x4e+1, 0x40);    /* set bit5 = 1 to clear bit5 */
outportb(0x4e, 0xf0);      /* select offset f0h */
outportb(0x4e+1, 0x81);    /* set bit7 =1 to enable WDTRST# */
outportb(0x4e, 0xf6);      /* select offset f6h */
outportb(0x4e+1, 0x05);    /* update offset f6h to 0ah :10sec */
outportb(0x4e, 0xf5);      /* select offset f5h */
outportb(0x4e+1, 0x20);    /* set bit5 = 1 enable watch dog time */

outportb(0x4e, 0xAA);      /* stop program , Exit */
```

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